



Mathbits

Minnesota Council of Teachers of Mathematics

www.mctm.org

The MCTM Board of Directors is instituting a task force concept to replace the special committees structure of the organization that has evolved through the years. Two reasons for this change are to provide opportunities for members to be involved in the work of the Council and to focus the work of the organization on key areas.

Call for Task Force Members

Therefore, the board is putting out a call for volunteers for three task forces. These task forces are being formed by board action to respond to several resolutions proposed at the October 2001 Delegate Assembly. (The 2001 Delegate Assembly Resolutions appear on pages 3 and 4.)

If you are interested in joining one of the task forces described below, submit your name via email to MCTM President Tom Muchlinski at muchlinski@earthlink.net or you can find a volunteer form on the MCTM web site at www.mctm.org.

Membership Task Force

Charge: To develop a plan to:

- a) increase membership.
- b) involve members in the work of the Council and to acknowledge their contributions.

Membership: 6 members from varied regions and levels.

This task force is being formed in response to Resolutions 8, 10, and 11 of the Delegate Assembly.

Professional Concerns Legislative Task Force

Charge: A. Keep abreast of legislative issues that relate to mathematics education and MCTM.

- Profile of Learning
- Best Practices
- Testing

B. Report on issues which MCTM membership can provide input to legislators.

Membership: 4 members.

This task force is being formed in response to Resolution 4 of the Delegate Assembly.

Professional Concerns Task Force (New Teachers, Preservice Teachers)

Charge: Develop action plan(s) for how MCTM can address the following issues:

- Recruitment, preparation and induction of pre-service and new MCTM teachers.
- New teacher mentorship program with support for both mentor and mentee.

Membership: 6 members from varied regions and levels.

This task force is being formed in response to Resolutions 12–18 of the Delegate Assembly.

2 Mathbits

The 2001 Minnesota Education Yearbook, released in early January, reported that 32% of the students in Minnesota's public four-year colleges and universities were in need of remediation. Of these students, 98% at the University of Minnesota and 87% at the other four-year institutions needed remediation in mathematics. In the two-year colleges, 46% of the students needed remediation, with half of these needing remediation in mathematics. Other reports cite the fact that students who enter the workforce directly from high school are also poorly prepared in mathematics.

President's Column

In analyzing why this situation exists, the 2001 Minnesota Education Yearbook identifies low expectations as one possible explanation. Too many students simply do not take enough mathematics. At the heart of standards based mathematics is the concept of teaching *all* students important and meaningful mathematics. The realization of this vision requires a commitment on the part of *all* teachers as well as a commitment on the part of many other pertinent constituencies such as administrators, parents, school board members, and the community at large to the belief that *all* students can learn mathematics.

Studies such as the Third International Mathematics and Science Study (TIMSS) reveal that this low achievement is not so much about the students but about what we teach and how we teach it. Certainly there are issues around students that need to be addressed, such as readiness to learn and absenteeism, but there is much we can do to move us closer to realizing this vision.

We need to look at the teaching of mathematics systemically, from grades K – 12. Poor achievement in high school mathematics is as much an indictment of students' elementary and middle grades mathematics experiences as it is of their high school experience. We need to agree upon what are the important ideas students need to learn and then articulate how these ideas build and connect throughout the grades.

We need to realize that how well students learn mathematics is fundamentally connected to how they are taught mathematics. All students can learn, but all students do not learn in the same way. As teachers, we must provide opportunities that actively engage students in the learning of mathematics. We must be flexible and employ multiple strategies to help students of all ability levels learn mathematics with understanding by connecting the mathematics to their previous learning.

None of this is easy. But just as all students can learn mathematics, all teachers can teach mathematics in ways that promote understanding. It may require us to strengthen our own understanding of mathematics, it may require us to employ new and varied instructional strategies, but it can be done if we are willing to work together to build on what we do well and to change what needs to change.

Tom Muchlinski
MCTM President

**2001 Delegate
Assembly
Resolutions**

Resolution 1. MCTM advocate having the 11th grade MCA test given as late in the school year as possible.

Action: None.

Resolution 2. MCTM in collaboration with the Department of Children, Families, and Learning and SciMathMN educate all stakeholders (students, parents, the media, school boards) about the 11th grade MCA test (e.g., purpose, make-up, scoring, reporting).

Action: Articles from the state assessment department and others will be solicited for *Mathbits*.

Resolution 3. MCTM lobby the legislature to restore funding for the Best Practice Network.

Action: None.

Resolution 4. MCTM draft a letter to the legislature requesting support via IST (Instructional Support Teams) and the Best Practice Network.

Action: Assigned to a Task Force under the Professional Concerns Committee.

Resolution 5. MCTM assist districts in implementing standards based mathematics.

Action: Tabled until the February MCTM Board meeting.

Resolution 6. MCTM study the feasibility of holding regional meetings (workshops) to promote math teaching and professional involvement.

Action: Tabled until the February MCTM Board meeting.

Resolution 7. MCTM examine the duties of its President. The purpose of the investigation would be to determine if it is possible to lighten the President's workload or to financially compensate the President.

Action: Assigned to the Executive Committee.

Resolution 8. MCTM inform teachers in all schools (public and private) about its conferences, about becoming an MCTM member, and the benefits of joining MCTM.

Action: Assigned to a Task Force under the Membership Committee.

Resolution 9. MCTM develop a clearing center (through the District Directors) for conference registrants to help coordinate travel arrangements.

Action: None.

Resolution 10. MCTM use email addresses of members to specifically promote MCTM conferences and activities (targeted email).

Action: Assigned to the same Task Force as resolution 8.

Resolution 11. MCTM increase membership and participation in activities by brainstorming ways members can get involved in MCTM activities, and by posting (on the web) opportunities and whom to contact. In addition MCTM will contact people who volunteer with at least a letter of acknowledgment in a timely fashion and will put their information in a data base.

Action: Assigned to the same Task Force as resolutions 8 and 10.

Mathbits

2001 Delegate Assembly Resolutions (Continued)

Resolution 12.MCTM assist “new” MCTM teachers.

Resolution 13.MCTM investigate initiating a new teacher mentor program that trains mentors and supports both the mentor and mentee with a stipend.

Resolution 14.MCTM offer a reduced rate (for membership and/or conferences) for first-time members when sponsored by a current MCTM member.

Resolution 15.MCTM actively recruit high school students into mathematics teaching.

Resolution 16.MCTM develop a program to assist pre-service teachers to create a pathway for a successful career in mathematics teaching (e.g., web site connections for careers, spring conference sessions on interviewing, and the formation of a network of beginning teachers).

Resolution 17.MCTM look into the feasibility of creating a board position (VP of new math teachers) that would look at ways of supporting new teachers and to retain them in the profession. (Ideas would include: more specific workshops targeted for K-5 teachers to support content knowledge; a buddy/pen-pal system connecting new teachers to experienced teachers; expansion of the residency program; a web site for asking questions; training of mentors; guidelines for schools on how to treat/support new teachers; encouragement of the state to fund a living wage).

Resolution 18.MCTM continue and expand its efforts (through college mathematics education faculty) to encourage MCTM membership and involvement of pre-service teachers.

Action: Resolutions 12 - 18 assigned to a Task Force under the Professional Concerns Committee.

Volunteers Needed

Are you attending the NCTM Conference in Las Vegas? Volunteer workers are needed to staff the Local Sales booth. Volunteers who work 2-hour shifts receive these benefits:

- No prep work—show up for your shift and leave when you’re done.
- Simple work—collect money and hand out merchandise.
- Use the booth as a base to store personal items.
- Receive a free t-shirt or make-it, take-it packet if you work a double shift (4 hours).
- Conference leftovers are given first to volunteers.
- Network with other conference attendees.

Volunteering is a fun part of the conference experience. If you’re interested in this opportunity, contact Robert Andre by email (randre@washoe.k12.nv.us).

**2002 Symposium
Explores Patterns,
Functions,
Relationships, and
Algebraic Reasoning**

Are you and your colleagues looking for ideas for translating state and national standards to your own classroom? Then form a team and plan to attend the MCTM/SciMath Symposium on Mathematics Education: *Principles and Standards for School Mathematics: Resources for Translating Concepts to Action*. The Symposium will be held Thursday, March 21, 2002, at the Duluth Entertainment Convention Center immediately preceding the MCTM Spring Conference that takes place on March 22-23.

The 2002 Symposium will help you and your colleagues explore strategies to implement the vision of the National Council of Teachers of Mathematics document, *Principles and Standards for School Mathematics*, particularly as it relates to the Minnesota Standards emphasis on patterns, functions, relations and algebraic reasoning. Symposium participants will work in grade level bands to explore how the NCTM *Navigations* and *Illuminations* resources can help teachers implement Minnesota Standards in patterns, functions, relations, and algebra. They will then develop plans within school or district teams to implement resources and teaching strategies and support continued improvement over time.

Peggy House, Chair of the NCTM Navigations Project, will keynote the Symposium. Many MCTM members will remember Peggy from her years at the University of Minnesota and her leadership in Minnesota mathematics education. She is now the Director of the Glenn T. Seaborg Center for Teaching and Learning Science and Mathematics at Northern Michigan University and a past member of the NCTM Board.

For more information and registration forms, see the Conference section of the MCTM web site (www.mctm.org) or call Jacqui Steele at the SciMath office (651-582-8852). Registration numbers are limited, so register early. Individuals may attend, but reduced fees for multiple registrations from the same school or district encourage team registrations.

**MCTM Announces
2002 Honorary
Members**

The MCTM Board of Directors has conferred honorary membership on Sharon Stenglein and Dick Hanson. Honorary membership is awarded to members who have made significant contributions to the Council and to mathematics education. Sharon retired in September after serving for eleven years as the mathematics specialist at the Minnesota Department of Children, Families and Learning. Prior to working at CFL, she taught high school and college mathematics and served on the MCTM Board of Directors as the Vice President for Mathematics. Dick retired several years ago after a long and distinguished career as a mathematics teacher at Burnsville High School. He is a past recipient of the Presidential Award for Excellence in Teaching Mathematics and served on the MCTM Board of Directors as the Senior High Vice President. Sharon and Dick will be honored on Friday, March 22, during the evening banquet at the Spring Mathematics Conference in Duluth.

Pi Day is March 14 (3.14). Celebrate!

Navigating through Algebra

The Navigations series is being developed by the National Council of Teachers of Mathematics to help teachers realize the vision of the *Principles and Standards for School Mathematics*. The four grade-band Navigations books on Algebra are organized around a few essential big ideas and each will address how those ideas are introduced and how they grow. The four books together will illustrate the growth and connectedness of the big ideas Pre-K through grade 12.

Each book is packaged with a compact disk that correlates with the publication and serves as an expansion of the book. The books refer readers to resources on the disks, including masters of instructional materials that teachers can print and use, interactive electronic activities related to concepts developed in the book, and related articles from NCTM.

Grade Band PK-2: *Navigating through Algebra* demonstrates how some of the fundamental ideas of algebra can be introduced, developed, and extended. It focuses on repeating and growing patterns, introducing the concepts of variable and equality, and examining relations and functions. This book features activities with questions that stimulate students to think more deeply about the mathematical ideas. It discusses expectations for students' accomplishment and provides helpful margin notes and blackline masters.

Grade Band 3-5: *Navigating through Algebra* focuses on important ideas of algebra at this grade level, such as patterns, variables and equations, and functions. The book presents student activities that introduce, and promote familiarity with, these ideas. It features margin notes with teaching tips, anticipated student responses, and assessment ideas for each activity.

Grade Band 6-8: *Navigating through Algebra* presents topics on integrating the themes of using mathematical models and representing and analyzing mathematical situations and structures. The book features activities and problems that require students to use the multiple representations related to work with functions and to highlight interactions that may occur among those representations. It includes chapters such as "Understanding Patterns, Relations, and Functions," "Analyzing Change in Various Contexts," and "Exploring Linear Relations."

Grade Band 9-12: *Navigating through Algebra* addresses algebra as a language of process, expands the notion of variables, and develops the notion of the representation of functions. The book also extends students' understanding of algebraic equivalence and of change. It features activities that can be used with students or as professional development exercises for teachers.

Deb Guthrie, a teacher at Valentine Elementary School in Moundsview, and Emily Larsen, a teacher at White Bear Lake High School, were named Christa McAuliffe Fellows for the 2001-2002 school year. This yearlong fellowship program is named in memory of the teacher who died on the space shuttle Challenger. The Minnesota Fellows meet several times during the school year and receive a \$5,500 stipend. In addition, they will complete projects designed to improve classroom instruction. The projects will be shared with other teachers from around the nation at a gathering of McAuliffe Fellows in Washington, DC.

MCTM Members Named McAuliffe Fellows

Deb Guthrie will work on a staff development model to be used in her district to provide on-going in-service/professional development for teachers and their work with the Everyday Mathematics curriculum. She will meet in a study group with seven teachers twice a month to discuss articles they've read and problems they've encountered related to the teaching of math in the classroom. The teachers are paired up at each grade level and meet to work on joint planning of one lesson per quarter. They work to integrate the various parts of Everyday Mathematics into the lesson to see how all the pieces fit and work together. After the lesson is fully planned, the teachers observe each other facilitating the lesson and then get together to debrief the lesson, noting what went well and how it could be improved. The teams will work on three of these "lesson studies" this year. Teachers will videotape their math lessons and reflect on those tapes in journals. They will also reflect on other aspects of their math learning/teaching as they read articles, books, and implement new ideas and best practice.

Emily Larsen will work on a project to analyze course offerings for low ability/at risk high school students in her district. Currently the district offers a program for sixty 9th grade students who have the lowest scores on the Minnesota Basic Skills Math Test. Those students are placed in a class of twenty students and the course is team taught with a Special Education teacher. The students complete the same curriculum as all other students, but they take the course over a full year, 85 minutes a day, and there is a great deal of review included for the Basic Skills Test. As 10th graders, the students are either placed in a similar yearlong course or placed back in the regular paced course. The two components of this project include discussion of the courses offered and the possible creation of a diagnostic and remediation tool for the Basic Skills Test.

Congratulations to both of these teachers.

Minnesota Comprehensive Assessment for Grade 11 Mathematics

Legislation passed in 1997 established the Statewide Testing and Reporting System. It requires annual testing of all students at grades three, five, eight and high school. The Minnesota Comprehensive Assessment for High School Mathematics will be given for the first time to all 11th grade students in April, 2002. State advisory groups made up of high school teachers, higher education faculty, assessment specialists, and the state Mathematics Specialist have been working on the development of the test since 1998. The test is aligned to the High Standards and includes content from all five high school level standards. The purpose of the test is to inform schools and districts as to how students are meeting the High Standards. The test contains both multiple choice and open-ended items. The test design includes a set of common items that all students take as well as field test items that are different among the test forms. The field test items are tested for validity and students are not scored on these items. Students are evaluated in both process and content strands and each problem is coded in each strand. The process strands with their target percentages are: Conceptual Knowledge (30%), Procedural Knowledge (40%) and Applications and Problem Solving (40%). The content strands with their target percentages are: Discrete Mathematics (15-25%), Chance and Data Handling (15-25%), Algebraic Patterns (15-25%), Technical Applications (15-25%) and Shape, Space and Measurement (20-30%). The test specifications and sample problems are available on the CFL website: <http://cfl.state.mn.us>.

2002

Mark Your Calendar

3/14	Pi Day
3/21	MCTM/SciMath Symposium on Mathematics Education, Duluth, Minnesota
3/22 – 3/23	MCTM Spring Conference, Duluth, Minnesota
4/21 – 4/24	NCTM Annual Meeting, Las Vegas, Nevada
4/26	World's Largest Math Event 8, "Entertaining Mathematics"
6/20 – 6/22	NCTM Regional Leadership Conference, Minneapolis

New Program in Statistics Education

The University of Minnesota is pleased to announce a new graduate program in Statistics Education, beginning Fall 2002. Students may earn an M.A or a Ph.D. in this program, which is housed in the Department of Educational Psychology, in the College of Education and Human Development. All students in the new program will be expected to develop their knowledge of areas related to statistics education as well as methodological competencies in statistics, measurement, and evaluation. A teaching internship allows students to apply what they learn to the classroom setting and receive supervision and feedback on their teaching. The research requirement for the master's thesis or doctoral dissertation prepares students to conduct high quality educational research applied to the teaching and learning of statistics, and to link the results of research to classroom practice.

Two new courses in statistics education will be offered as part of this program. One is "Becoming a Teacher of Statistics," which focuses on practical aspects of teaching first courses in statistics at the high school or college level. A second class is "Research on Teaching and Learning Statistics," which examines classic and current research on different aspects of statistics education.

There are opportunities for **Graduate Research and Teaching Assistantships** that provide tuition and also pay a stipend for qualified graduate students. For more information, please contact Joan Garfield (612-625-0337, jbg@umn.edu).

Mathbits

Published by

Minnesota Council of Teachers of
Mathematics
P.O. Box 120418
New Brighton, MN 55112

www.mctm.org

Tom Muchlinski, President
651-582-8859 – W
763-475-3168 – H
muchlinski@earthlink.net

Arnie Cutler, Executive Director
612-626-8326 – W
651-631-2136 – H
cutler@tc.umn.edu

Pam Brethorst, Editor
651-690-9075 – H
pambrethorst@aol.com

Forwarding and Return Postage
Guaranteed
Address Service Requested

Non-Profit
U.S. Postage
PAID
Permit No. 1967
Minneapolis, MN